

1-15-14

1<sup>st</sup> Geo

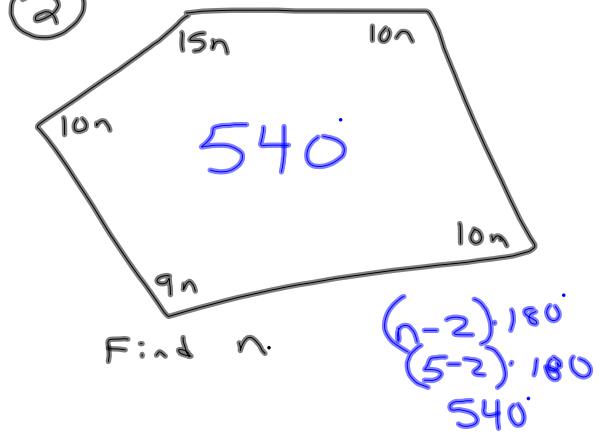
- ① What is the sum of all the interior angles in an octagon?

$$(n-2) \cdot 180^\circ$$

$$6 \cdot 180^\circ$$

$$1080^\circ$$

②



$$\begin{aligned} & (n-2) \cdot 180^\circ \\ & (5-2) \cdot 180^\circ \\ & 540^\circ \end{aligned}$$

$$15n + 10n + 10n + 9n + 10n = 540^\circ$$

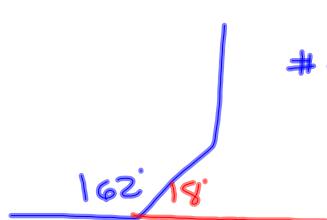
$$54n = 540$$

$$n = 10$$

- ③ How many degrees is each angle in a decagon?

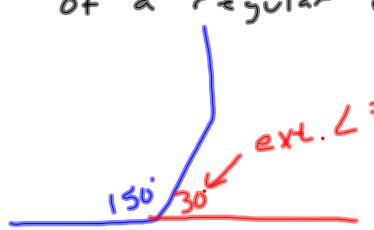
A diagram of a decagon. At one vertex, a blue ray extends to the left, forming an exterior angle of  $36^\circ$  with the side of the decagon. The interior angle at the same vertex is  $144^\circ$ . To the right of the vertex, a red bracket indicates the exterior angle. Below the diagram, the formula for the exterior angle is given as  $\text{ext } \angle = \frac{360}{n}$ , with  $n=10$  substituted, resulting in  $= 36$ .

④ The measure of an interior angle of a regular polygon is  $162^\circ$ . How many sides does the polygon have?



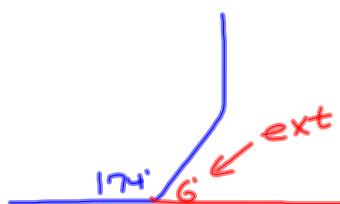
$$\begin{aligned} \# \text{ of sides} &= \frac{360}{\text{ext. } \angle} \\ &= \frac{360}{18} \\ &= 20 \text{ sides} \end{aligned}$$

⑤ What is the interior angle of a regular dodecagon?



$$\begin{aligned} \text{ext. } \angle &= \frac{360}{n} \\ &= \frac{360}{12} \\ &= 30^\circ \end{aligned}$$

⑥ What is the interior angle to a regular polygon that has 60 sides?



$$\begin{aligned} \text{ext. } \angle &= \frac{360}{60} \\ &= 6^\circ \end{aligned}$$

